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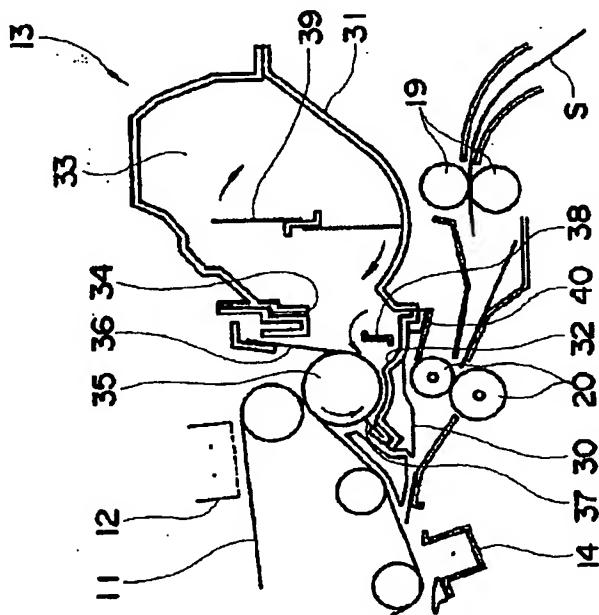
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(54)【発明の名称】 画像記録装置

## (57)【要約】

【目的】 シート搬送ローラを清掃するクリーニング部材を備える画像記録装置において、そのクリーニング部材を交換する煩わしさをなくし、クリーニング部材のクリーニング性能を低下させることなくシート搬送ローラの清掃をいつもきれいに行い得るようにする。

【構成】 装置本体に現像器ユニット13を交換可能に備える。その現像器ユニット13の現像器本体30にクリーニング部材40の基端を取り付け、そのクリーニング部材40の先端を上レジストローラ20の外周面に接触してなる。そして、レジストローラ対20・20を回転してシートSを感光体11へと搬送するとき、上レジストローラ20に付着した異物を、クリーニング部材40でかき取る。現像器ユニット13が寿命となると、定期的に新しいそれと交換する。そのとき、クリーニング部材40ごと一体的に新しいものと交換する。



## 【特許請求の範囲】

【請求項1】 シート搬送ローラをクリーニング部材で清掃する画像記録装置において、前記クリーニング部材を、消耗部品または消耗ユニットと一体的に交換可能に設けてなる、画像記録装置。

【請求項2】 前記クリーニング部材でかき取った異物を溜める貯溜部材も、消耗部品または消耗ユニットと一体的に交換可能に設けてなる、請求項1に記載の画像記録装置。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】この発明は、プリンタ・複写機・ファクシミリ・印刷機など、シートに画像を記録する画像記録装置に関する。詳しくは、そのうち、シートを搬送するシート搬送ローラに、シート状のクリーニング部材の先端を押し当ててシート搬送ローラを清掃する画像記録装置に関する。

## 【0002】

【従来の技術】従来、この種画像記録装置、たとえばレーザプリンタの中には、図5に示すように、上ガイド板201上に異物貯溜部材2を設け、その異物貯溜部材2にシート状のクリーニング部材3の基端を取り付け、そのクリーニング部材3の先端をシート搬送ローラ対4・4の上ローラ4に接触する構成としたものがある。そして、清掃時、図中矢示方向に回転する上ローラ4に付着した紙粉・トナー・埃等の異物を、クリーニング部材3でかき取り、そのかき取った異物をいったん異物貯溜部材2内に溜めていた。

【0003】しかし、この従来のものでは、クリーニング部材3を固定するから、長期に渡って使用するうちに30上ローラ4との摩擦で先端が摩耗してクリーニング性能が低下する問題がある。

【0004】そこで、従来の中には、クリーニング部材を着脱自在に備えて定期的に交換可能としたものもあつた。

## 【0005】

【発明が解決しようとする課題】ところが、そのようにクリーニング部材を交換可能にしても、それを定期的に交換しなければならない煩わしさがあつた。

【0006】そこで、この発明の目的は、上述のような40画像記録装置において、クリーニング部材を交換する煩わしさをなくし、しかも、クリーニング部材のクリーニング性能を低下させることなくシート搬送ローラの清掃を常に確実に行い得るようにすることにある。

## 【0007】

【課題を解決するための手段】そのため、こ発明は、たとえば以下の図示実施例のように、上レジストローラ20のようなシート搬送ローラをクリーニング部材40で清掃する画像記録装置において、前記クリーニング部材40を、消耗部品または現像器ユニット13のような消50

耗ユニットと一体的に交換可能に設けてなる、ことを特徴とする。

【0008】請求項2に記載のものは、たとえば以下の図示実施例のように、請求項1に記載の画像記録装置において、前記クリーニング部材40でかき取った異物を溜める貯溜部材50も、消耗部品または消耗ユニットと一体的に交換可能に設けてなる、ことを特徴とする。

## 【0009】

【作用】そして、クリーニング部材40でシート搬送ローラを清掃する。しかし、この発明による画像記録装置では、消耗部品または消耗ユニットを定期的に交換するとき、このクリーニング部材40も併せて一体的に交換する。

【0010】請求項2に記載のものでは、シート搬送ローラの清掃時、クリーニング部材40でかき取った異物を貯溜部材50に溜める。そして、消耗部品または消耗ユニットを定期的に交換するとき、クリーニング部材40とともにこの貯溜部材50も併せて一体的に交換する。

## 【0011】

【実施例】以下、図面を参照しつつ、この発明の実施例について説明する。図4は、この発明の一実施例であるレーザプリンタの全体構成概略図である。

【0012】図中符号10で示すものは、装置本体である。装置本体10は、下本体10aと上本体10bとで構成し、図3でも示すように、下本体10aに対し上本体10bを開閉自在とする。装置本体10内には、図4に示すごとく、ほぼ中央にベルト状の感光体11を設ける。感光体11のまわりには、図4中矢印で示す駆動方向に順に、帶電器12、現像器ユニット13、転写器14、クリーニング器15を配置する。帶電器12の上側には、光書込み器16を配置し、転写器14の下側には、シートSを収納した給紙カセット17を取り付けれる。

【0013】そして、給紙カセット17からシートSを給紙コロ18により図4中矢印A方向に繰り出し、クリップローラ対19・19で送り、さらにタイミングをとつてレジストローラ対20・20で感光体11の下側に搬送する。一方、感光体11は、矢示する時計方向に駆動し、その際、帶電器12で表面を一様に帶電し、光書込み器16からのレーザ光を照射して感光体11上に静電潜像を形成する。この潜像は、現像器ユニット13位置を通過するときトナーによって可視像化する。そして、この可視像を、感光体11の下側に搬送したシートSの上面に転写器14で転写する。しかし、その転写後シートSを定着器21へと搬送して転写画像を定着する。そして、定着器21を出たシートSを、排紙路22を通して排紙ローラ23で図4中矢印B方向に排出する。

【0014】他方、画像転写後の感光体11は、クリーニング器15で残留トナーを除去し、その後に除電す

る。

【0015】ところで、上述した現像器ユニット13は、下本体10aに着脱自在に取り付けて交換可能とし、図1中左側の現像器本体30にトナー容器31を熱熔着等で一体に備えてなる。そして、現像器本体30内に現像室32を設け、トナー容器31内にトナー室33を設け、そのトナー室33と現像室32間にトナー補給口34を設ける。しかして、一方の現像室32には、感光体11と接触させて現像ローラ35を回転自在に設け、その現像ローラ35の表面に、図1中右上側から薄層ブレード36の先端を押し当て、左下側から除電ブラシ37の先端を押し当ててなる。また、トナー室33寄りに、トナーを現像ローラ35へと補給する補給部材38を回転自在に設けてなる。他方のトナー室33には、アジテータ39を回転自在に設ける。

【0016】そして、適宜駆動モータ(図示省略)を駆動し、図1中各々矢示するごとく、現像ローラ35・補給部材38・アジテータ39を回転する。しかして、アジテータ39でトナーを攪拌してトナー室33内からトナー補給口34を通して現像室32内へと供給し、補給部材38で現像ローラ35の表面へと補給する。さらに、その補給したトナーを、薄層ブレード36の先端でせき止めて薄層化するとともに擦って帶電する。そして、該トナーの一部を現像ローラ35で感光体11の表面に静電気的に付着し、その感光体11の表面の静電潜像を可視像化する。一方、現像ローラ35上に残ったトナーを除電ブラシ37で除電して除去する。

【0017】さて、この発明によるレーザプリンタは、図1に示すごとく、トナー補給口34の下側で現像器本体30にクリーニング部材40の基端側を取り付ける。30クリーニング部材40は、レジストローラ対20・20の軸方向に沿って長手のシート状部材からなり、先端を上レジストローラ20の外周面に接触してなる。

【0018】そして、レジストローラ対20・20を回転してシートSを感光体11へと搬送するとき、上レジストローラ20の外周面に付着した紙粉等の異物を、クリーニング部材40でかき取る。そして、上レジストローラ20を清掃して該異物がシートSに付着することを防止する。

【0019】しかし、この発明によるレーザプリンタでは、現像器ユニット13が寿命となると、定期的に新しいそれと交換する。そのとき、クリーニング部材40ごと一体的に新しいものと交換する。

【0020】ところで、上述した図示実施例では、クリーニング部材40を現像器ユニット13と一体的に交換可能に設けた。しかし、この発明では、たとえば図2に示すように、クリーニング部材40でかき取った異物を溜める貯溜部材50も、現像器ユニット13と一体的に交換可能に設ける構成としてもよい。

【0021】すなわち、この他の図示実施例では、トナ

50を取り付け、その貯溜部材50にクリーニング部材40の基端を取り付ける。そして、そのクリーニング部材10の先端を上レジストローラ20の外周面に接触してなる。

【0022】しかし、現像器ユニット13を定期的に交換するとき、クリーニング部材40および貯溜部材50ごと一体的に新しいものと交換する。

【0023】なお、この発明は、上述した現像器ユニット13に限らず、定期的に交換の必要なその他の消耗ユニットに、前記クリーニング部材を一体的に交換可能に設けることもできる。また、そのようなユニット状のものに限らず、定期的に交換の必要な適宜消耗部品に、このクリーニング部材を一体的に交換可能に設けることもできる。

【0024】また、上述した図示実施例では、上レジストローラ20をクリーニング部材40で清掃したが、クリーニング部材40で清掃するシート搬送ローラは、そのような上レジストローラ20に限らない。

【0025】

【発明の効果】したがって、この発明によれば、シート搬送ローラをクリーニング部材で清掃する画像記録装置において、そのクリーニング部材を、消耗部品または消耗ユニットと一体的に交換可能に設けることから、寿命によるクリーニング性能の低下を招くことなく、クリーニング部材でシート搬送ローラを経時に変わることなく常にきれいに清掃することができる。また、そのクリーニング部材を他の消耗部品等と個別に交換する煩わしさをなくすことができる。

【0026】請求項2に記載のものによれば、そのクリーニング部材でかき取った異物を溜める貯溜部材を設けることから、消耗部品等の寿命が長い場合でも、かき取った異物をこぼすことなく確実に溜めることができる。また、この貯溜部材も、消耗部品または消耗ユニットと一体的に交換可能に設けることから、その貯溜部材を他の消耗部品等と個別に交換する煩わしさをなくすことができる。

【図面の簡単な説明】

【図1】この発明の一実施例であるレーザプリンタの要部の概略構成図である。

【図2】この発明の他の実施例であるレーザプリンタの要部の概略構成図である。

【図3】図1のレーザプリンタを、上本体を開けた状態で示す斜視図である。

【図4】そのレーザプリンタの内部機構を示す全体概略構成図である。

【図5】従来のレーザプリンタにおけるシート搬送ローラのクリーニング構造を示す断面図である。

【符号の説明】

13 現像器ユニット

(4)

特開平6-211374

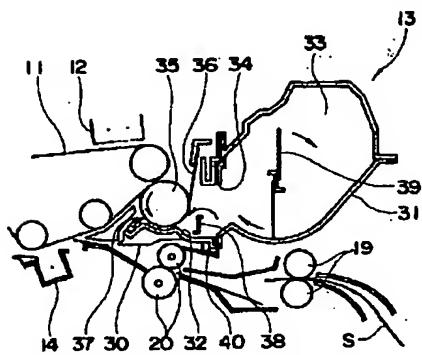
5

20 上レジストローラ (シート搬送ローラ)  
40 クリーニング部材

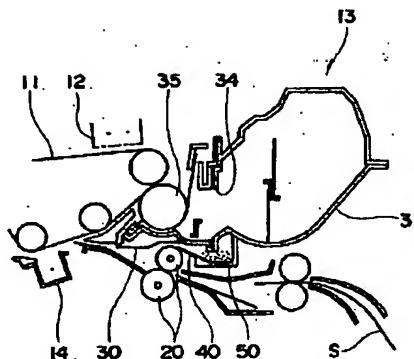
6

50 貯溜部材

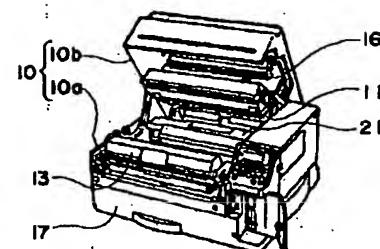
【図1】



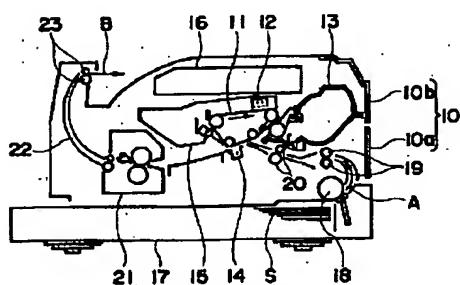
【図2】



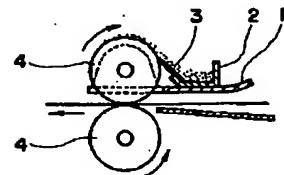
【図3】



【図4】



【図5】



## IMAGE RECORDING DEVICE

Patent Number: JP6211374

Publication date: 1994-08-02

Inventor(s): SUGINO YOICHIRO

Applicant(s): RICOH CO LTD

Requested Patent:  JP6211374

Application Number: JP19930023308 19930118

Priority Number(s):

IPC Classification: B65H5/00; G03G15/00; G03G21/00

EC Classification:

Equivalents:

### Abstract

**PURPOSE:** To always neatly clean a sheet conveying roller without deteriorating cleaning performance of a cleaning member by eliminating complication of replacing the cleaning member, in an image recording device provided with the cleaning member for cleaning the sheet conveying roller.

**CONSTITUTION:** A developing unit 13 is provided in a device main unit in a replaceable form. The base end of a cleaning member 40 is mounted on a developing main unit 30 of this developing unit 13, and a point end of this cleaning member 40 is brought into contact with the peripheral surface of an upper register roller 20. When a sheet S is conveyed to a sensitized unit 11 by rotating the paired register rollers 20, 20, foreign matter sticking to the upper register roller 20 is scraped off by the cleaning member 40. When a life expires of the developing unit 13, it is periodically replaced with the new unit. Here is replaced the unit with the new unit integrally together with the cleaning member 40.

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CLAIMS

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[Claim(s)]

[Claim 1] Image recording equipment which comes to prepare the aforementioned cleaning member with consumables or a unit [ exhausting ] possible [ exchange ] in one in the image recording equipment which cleans a sheet conveyance roller by the cleaning member.

[Claim 2] Image recording equipment according to claim 1 with which it comes to prepare as exchangeable [ the reservoir material which collects the foreign matters written with the aforementioned cleaning member ] in one as consumables or a unit [ exhausting ].

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[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the image recording equipment which records a picture on sheets, such as a printer, a copying machine, facsimile, and a printing machine. the sheet conveyance roller which conveys a sheet in detail -- sheet-like cleaning -- it is related with the image recording equipment which presses the nose of cam of a member and cleans a sheet conveyance roller

[0002]

[Description of the Prior Art] conventionally, in this seed image recording equipment, for example, a LASER beam printer, it is shown at drawing 5 -- as -- the upper guide plate 1 top -- the foreign matter reservoir material 2 -- preparing -- the foreign matter reservoir material 2 -- sheet-like cleaning -- the end face of a member 3 -- attaching -- the cleaning -- there are some which considered the nose of cam of a member 3 as the composition in contact with the upper roller 4 of sheet conveyance roller pair 4 and 4 and foreign matters, such as paper powder, a toner, dust, etc. which adhered to the upper roller 4 rotated to drawing Nakaya \*\*\*\*\* at the time of cleaning, -- cleaning -- it wrote with the member 3 and the written foreign matters were once collected in the foreign matter reservoir material 2

[0003] however -- this conventional thing -- cleaning -- since a member 3 is fixed, while using it over a long period of time, the problem to which a nose of cam is worn out in friction with an upper roller 4, and a cleaning performance falls is

[0004] Then, there was some former was equipped with free [ attachment and detachment of a cleaning member ], and exchange of was enabled periodically.

[0005]

[Problem(s) to be Solved by the Invention] However, the troublesomeness which must exchange them periodically even if it enables exchange of a cleaning member such is \*\*\*\*\*.

[0006] then, the troublesomeness for which the purpose of this invention exchanges a cleaning member in the above image recording equipments -- losing -- moreover -- cleaning -- it is in enabling it to always ensure cleaning of a sheet conveyance roller, without reducing the cleaning performance of a member

[0007]

[Means for Solving the Problem] therefore, \*\*\*\*\* -- for example, the following illustration examples -- like -- a sheet conveyance roller like the upper resist roller 20 -- cleaning -- the image recording equipment cleaned by the member 40 -- setting -- the aforementioned cleaning -- it is characterized by the thing it comes to prepare a member 40 with a unit [ exhausting ] like consumables or the development counter unit 13 possible [ exchange ] in one

[0008] a thing according to claim 2 -- for example, the following illustration examples -- like -- picture \*\*\*\*\* according to claim 1 -- setting -- the aforementioned cleaning -- it is characterized by the thing it comes to prepare the reservoir material 50 which collects the foreign matters written with the member 40 with consumables or a unit [ exhausting ] possible [ exchange ] in one

[0009]

[Function] and cleaning -- a sheet conveyance roller is cleaned by the member 40 the time of carrying out a deer and exchanging consumables or a unit [ exhausting ] periodically with the image

recording equipment by this invention -- this cleaning -- it exchanges in [ a member 40 ] one body in all

[0010] a thing according to claim 2 -- the time of cleaning of a sheet conveyance roller -- cleaning -- the foreign matter written with the member 40 is accumulated in the reservoir material 50 and the time of exchanging consumables or a unit [ exhausting ] periodically -- cleaning -- this reservoir material 50 is also exchanged in one body in all with a member 40

[0011]

[Example] Hereafter, the example of this invention is explained, referring to a drawing. Drawing 4 is the whole LASER beam printer composition schematic diagram which is one example of this invention.

[0012] It is the main part of equipment which is shown with the sign 10 in drawing. The main part 10 of equipment is constituted from Shimomoto object 10a and upper main part 10b, and as drawing 3 also shows, it enables opening and closing of upper main part 10b to Shimomoto object 10a. As shown in the main part 10 of equipment at drawing 4, the belt-like photo conductor 11 is mostly formed in the center. Around a photo conductor 11, the electrification machine 12, the development counter unit 13, the imprint machine 14, and the cleaning machine 15 are arranged in order to the driving direction shown by the drawing 4 Nakaya mark. The vessel 16 write-in [ optical ] is arranged to the electrification machine 12 up side, and the feed cassette 17 which contained Sheet S is attached in the imprint machine 14 bottom at it.

[0013] And it lets out Sheet S in the direction of drawing 4 Nakaya mark A by the feed koro 18 from the feed cassette 17, and sends by clip roller pair 19 and 19, timing is taken further, and it conveys to the photo conductor 11 down side by resist roller pair 20 and 20. On the other hand, a photo conductor 11 is driven to the clockwise rotation which \*\*\*\*, in that case, it is uniformly charged in a front face with the electrification vessel 12, irradiates the laser beam from the vessel 16 write-in [ optical ], and forms an electrostatic latent image on a photo conductor 11. This latent image is formed into a visible image with a toner, when it passes along development counter unit 13 position. And it imprints with the imprint vessel 14 on the upper surface of the sheet S which conveyed this visible image to the photo conductor 11 down side. A deer is carried out, the sheet S after the imprint is conveyed to a fixing assembly 21, and a transfer picture is established. Then, the sheet S which came out of the fixing assembly 21 is discharged in the direction of drawing 4 Nakaya mark B with the delivery roller 23 through the delivery way 22.

[0014] On the other hand, with the cleaning vessel 15, the photo conductor 11 after a picture imprint removes a remains toner, and discharges it after that.

[0015] By the way, the development counter unit 13 mentioned above is attached in Shimomoto object 10a free [ attachment and detachment ], makes exchange possible, and comes to prepare a toner bottle 31 for the main part 30 of a development counter of the left-hand side in drawing 1 at one by \*\*\*\* arrival etc. And a processing laboratory 32 is formed in the main part 30 of a development counter, the toner room 33 is formed in a toner bottle 31, and the opening 34 of the toner is formed between the toner room 33 and processing laboratory 32. A deer is carried out, and a photo conductor 11 is made to contact, it prepares free [ rotation of a developing roller 35 ], the nose of cam of the thin layer blade 36 is pressed against the front face of the developing roller 35 from the drawing 1 Nakamigi bottom, and it comes to press the nose of cam of the electric discharge brush 37 against one processing laboratory 32 from a lower left side. moreover, the supply which supplies a toner to toner room 33 approach to a developing roller 35 -- it comes to prepare free [ rotation of a member 38 ] It prepares in the toner room 33 of another side free [ rotation of an agitator 39 ].

[0016] and \*\*\*\* in [ of each ] drawing 1 of the drive motor (illustration ellipsis) is driven and carried out suitably -- as -- developing-roller 35 and supply -- a member -- 38 and an agitator 39 are rotated a deer -- carrying out -- an agitator 39 -- a toner -- agitating -- the opening 34 out of the toner room 33 of the toner -- letting it pass -- the inside of a processing laboratory 32 -- supplying -- supply -- the front face of a developing roller 35 is supplied by the member 38 Furthermore, it is ground and charged while damming up and carrying out lamination of the supplied toner at the nose of cam of the thin layer blade 36. And it adheres to the front face of a photo conductor 11 in static electricity in a developing roller 35 in a part of this toner, and the electrostatic latent image of the front face of the photo conductor 11 is formed into a visible image. On the other hand, the electric discharge brush 37

discharges and removes the toner which remained on the developing roller 35.

[0017] now, the LASER beam printer by this invention is shown in drawing 1 -- as -- the opening 34 bottom of the toner -- the main part 30 of a development counter -- cleaning -- the end face side of a member 40 is attached cleaning -- a member 40 consists of a sheet-like member of straight side in accordance with the shaft orientations of resist roller pair 20 and 20, and comes to contact the peripheral face of the upper resist roller 20 in a nose of cam

[0018] and foreign matters, such as paper powder which adhered to the peripheral face of the upper resist roller 20 when rotating resist roller pair 20 and 20 and conveying Sheet S to a photo conductor 11, -- cleaning -- it writes with a member 40 Then, it prevents that clean the upper resist roller 20 and this foreign matter adheres to Sheet S.

[0019] A deer is carried out, and in the LASER beam printer by this invention, if the development counter unit 13 serves as a life, it will exchange for new it periodically. that time -- cleaning -- it exchanges for a thing new in one the whole member 40

[0020] by the way -- the illustration example mentioned above -- cleaning -- the member 40 was formed possible [ exchange ] in one with the development counter unit 13 however, this invention shows, for example to drawing 2 -- as -- cleaning -- the reservoir material 50 which collects the foreign matters written with the member 40 is also good also as the development counter unit 13 and composition prepared possible [ exchange ] in one

[0021] namely, -- other illustration examples -- the opening 34 bottom of the toner -- a toner bottle 31 -- the reservoir material 50 -- attaching -- the reservoir material 50 -- cleaning -- the end face of a member 40 is attached and the cleaning -- it comes to contact the peripheral face of the upper resist roller 20 in the nose of cam of a member 10

[0022] the time of carrying out a deer and exchanging the development counter unit 13 periodically -- cleaning -- it exchanges for a thing new in one a member 40 and the whole reservoir material 50

[0023] In addition, this invention can also prepare the aforementioned cleaning member in the unit [ exhausting ] of required others of exchange possible [ exchange ] in one periodically in addition to the development counter unit 13 mentioned above. Moreover, this cleaning member can also be periodically prepared in the required proper consumables of exchange possible [ exchange ] in one in addition to the thing of the shape of such a unit.

[0024] moreover -- the illustration example mentioned above -- the upper resist roller 20 -- cleaning -- although cleaned by the member 40 -- cleaning -- the sheet conveyance roller cleaned by the member 40 is not restricted to such an upper resist roller 20

[0025]

[Effect of the Invention] Therefore, a sheet conveyance roller can always be finely cleaned by the cleaning member, without changing with time, without according to this invention, causing the cleaning performance degradation by the life in the image recording equipment which cleans a sheet conveyance roller by the cleaning member, since the cleaning member is prepared possible [ exchange ] in one with consumables or a unit [ exhausting ]. Moreover, the troublesomeness which exchanges the cleaning member for other consumables etc. individually can also be lost.

[0026] According to the thing according to claim 2, since the reservoir material which collects the foreign matters written with the cleaning member is prepared, it can accumulate certainly, without spilling the written foreign matter, even when lives, such as consumables, are long. Moreover, since this reservoir material is also prepared possible [ exchange ] in one with consumables or a unit [ exhausting ], it can also lose the troublesomeness which exchanges the reservoir material for other consumables etc. individually.

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[Translation done.]

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## PRIOR ART

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[Description of the Prior Art] conventionally, in this seed image recording equipment, for example, a LASER beam printer, it is shown at drawing 5 -- as -- the upper guide plate 1 top -- the foreign matter reservoir material 2 -- preparing -- the foreign matter reservoir material 2 -- sheet-like cleaning -- the end face of a member 3 -- attaching -- the cleaning -- there are some which considered the nose of cam of a member 3 as the composition in contact with the upper roller 4 of sheet conveyance roller pair 4 and 4 and foreign matters, such as paper powder, a toner, dust, etc. which adhered to the upper roller 4 rotated to drawing Nakaya \*\*\*\*\* at the time of cleaning, -- cleaning -- it wrote with the member 3 and the written foreign matters were once collected in the foreign matter reservoir material 2

[0003] however -- this conventional thing -- cleaning -- since a member 3 is fixed, while using it over a long period of time, the problem to which a nose of cam is worn out in friction with an upper roller 4, and a cleaning performance falls is

[0004] Then, there was some former was equipped with free [ attachment and detachment of a cleaning member ], and exchange of was enabled periodically.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the outline block diagram of the important section of the LASER beam printer which is one example of this invention.

[Drawing 2] It is the outline block diagram of the important section of the LASER beam printer which are other examples of this invention.

[Drawing 3] It is the perspective diagram showing the LASER beam printer of drawing 1 where an upper main part is opened.

[Drawing 4] It is the whole outline block diagram showing the internal mechanism of the LASER beam printer.

[Drawing 5] It is the cross section showing the cleaning structure of the sheet conveyance roller in the conventional LASER beam printer.

[Description of Notations]

13 Development Counter Unit

20 Upper Resist Roller (Sheet Conveyance Roller)

40 Cleaning -- Member

50 Reservoir Material

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[Translation done.]

**\* NOTICES \***

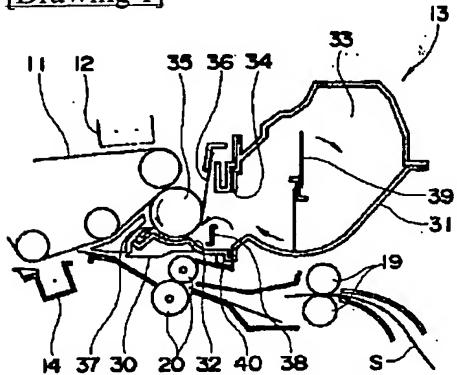
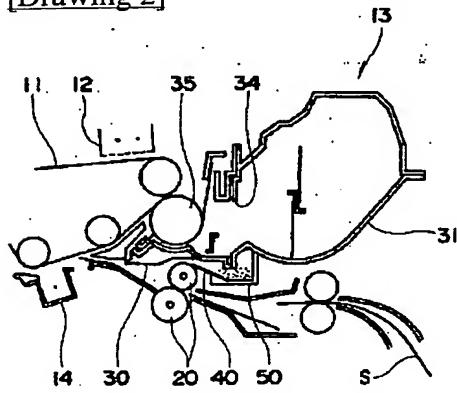
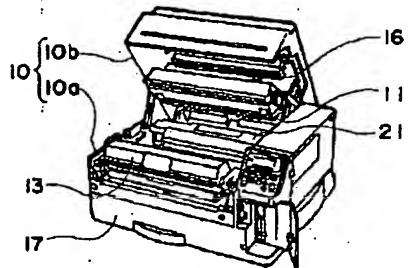
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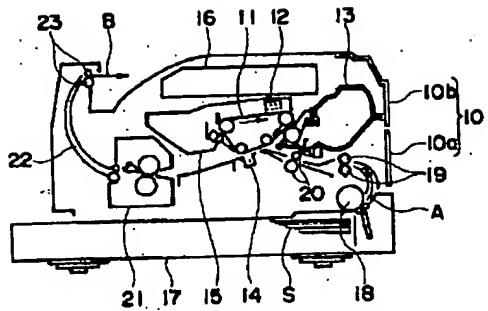
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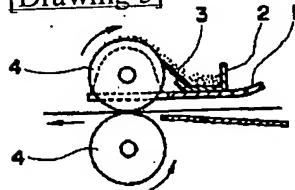
**DRAWINGS**

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**[Drawing 1]****[Drawing 2]****[Drawing 3]****[Drawing 4]**



[Drawing 5]



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[Translation done.]